INTRODUCTION

Topical Drug delivery
Topical drug delivery systems skin serves as one of the most easily accessible routes for drug administration. Stratum corneum has been regarded as the major barrier to penetration of substances into and through the skin. However, the presence of stratum corneum on the surface makes it selective towards applied drugs or delivery systems. [Babiuk S et al., 2000]

Topical delivery is defined as the application of pharmaceutical dosage form to the skin for direct treatment of cutaneous disorder or the cutaneous manifestation of the general disease, with the intent of confining the pharmacological or other effect of the drug to the surface of the skin. [Atiyeh B et al. 2009] Topical drug delivery systems include a large variety of pharmaceutical dosage form like semisolids, liquid preparation, sprays and solid powders. Most widely used semisolid preparation for topical drug delivery includes gels, creams and ointments. [Gisby J et al., 2000]

Skin
The skin, the heaviest single organ of the body, combines with the mucosal linings of the respiratory, digestive and urinogenital tracts to form a capsule which separates the internal body structures from the external environment. [Hofland H et al., 1992] The schematic representation with different layers of the skin is shown in the diagram below.

Microscopically, skin is multilayered organ composed of many histological layers. It is generally described in terms of three major layers – the epidermis, dermis and the hypodermis. Microscopic section of epidermis shows 5 parts- stratum corneum, stratum lucidum, stratum granulosum, stratum spinosum and stratum germinativum. [Tallau N et al., 2010]

Difference in Transdermal and Topical Drug Delivery
For Transdermal products the goal of dosage design is to maximize the flux through the skin into systemic circulation and simultaneously minimize retention and metabolism of the drug in the skin [Naik A et al., 2000]. In contrast, topical products are developed
to minimize the flux of the drug through the skin while maximizing its retention in the skin. [Heather A et al., 2005] However, for boths, topical and transdermal products, drugs must penetrate across the stratum corneum, the outermost layer of the skin. [Schatzelin A et al., 1998]

Topical delivery can be defined as the application of a drug containing formulation to the skin to directly treat cutaneous disorders or the cutaneous manifestation of general disease, with the intent of confining the pharmacological or other effect of the drug to the surface of the skin or within the skin. Topical activities may or may not require intra-cutaneous penetration and deposition. [Date A et al., 2006]

**Fungal Infection**

There are various types of microbes, can be divided into six main types: Archae, Bacteria, Fungi, Protista, Viruses and Microbial Mergers. The present invention is directed to dermatological compositions for killing or inhibiting the growth a variety of fungal pathogens known to cause a number of infectious diseases in humans. From this the area of interest will be to formulate the Novel Topical antifungal formulation. Fungal disease is ubiquitous in the world and antifungal medication account for sales of more than US$ 1 billion annually. Most fungal disorder is relatively benign but can become life threatening in immunocompromised or malnourished population. The mainstay of management of fungal infection and dermatophytes associated with skin and nail injuries has been oral and topical antifungal.

The delivery of drugs through most commonly used conventional preparations viz. creams, gels, lotions, emulsion, etc. limits the effectiveness of actives due to barrier properties i.e. epidermis of the skin which hinder the drug deposition. Thus selection of proper carrier’s extremely important by considering the view in the mind that they should increase drug deposition through topical formulations. [Papps P et al., 2004]
Topical / Transdermal Applications of Niosomes

Niosomes

Niosomes are non-phospholipids vesicular alternatives to liposomes. They are non-ionic surfactant vesicles or surfactant membrane vesicles. Niosomes are formed by self-assembly of non-ionic amphiphiles with aqueous media resulting in closed bilayer structures. [Uchegbu I et al., 1998]

Today there is a tremendous need of medicines for personal care arises due to significant changes occurring in the climate, due to increasing skin diseases like fungal infection skin diseases. Antifungal therapy is the treatment of infectious disease using typically, chemotherapeutic agents that either fungi or otherwise interfere with fungal growth.

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High throughput screening technologies in drug discovery presents an effective way to find new powerful substances. But in recent years it has become evident that the development of new drug alone is not sufficient to ensure in progress in drug therapy. Now day’s topical delivery of drugs particularly in case of skin problem such as psoriasis, skin fungal infection (dermatiatis) etc. is gaining importance and also posses lots of challenges. Drug delivery by topical route is effective only by better skin penetration to the required layer of skin. However, delivery of drug through topical preparation viz. creams, gel, lotion, ointment, emulsion etc. limits the effectiveness of active due to barrier properties of skin which hinder the drug deposition.

Thus, selection of proper carrier is extremely important. Penetration of drug will depend on the particle size and hence nanocarriers are promising delivery system. The 21st century will witness sea changes in the area of drug delivery giving rise to products more potent and safer. The conventional drug delivery systems and methods of
administration have changed drastically. Target specific drug delivery is likely to overcome much of criticism of conventional dosage forms. Cumulative result may be summarized as Optimized drug delivery encompassing greater potency, effectiveness, lesser side-effects, and better stability, and low cost, greater accessibility, eases of administration and patient compliance. [Spiclin P et al., 2003] Numerous techniques and devices have been experimented with to approach the problem of developing rational and therapeutically superior systems in which drug delivery is based on novel and non-traditional methods. Coating of particles, development of polymers, penetration enhancers, nanoparticles, microspheres, liposome, niosome, iontophoresis, sonophoresis, are all contributing to this upcoming mode of drug delivery. [Jia-You F et al., 2004]